CreateWorld 2015
A Digital Arts Conference

12-13 February 2015

Conference Proceedings

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Program
CreateWorld 2015
A Digital Arts Conference

THURSDAY 12 FEBRUARY 2014

10.30 am	*Registration – **Building S07 – Griffith Graduate Centre***		
11.00 am	**Conference Opening**	***Building S07, Room 2.16*** **Dr Geoff Garrett, Queensland Chief Scientist**	
11.15 am	**Keynote 1**	***Building S07, Room 2.16*** **Is There No Digital Arts? –** *Cat Hope*	
12.15 pm	**Session 1**	***Building S07, 2.16*** **Opera Composition and Performance Utilising Computer-Based Recording Technologies and Virtual Instruments: A Case Study** – Eve Klein	
		Valuing the Mature Dancer through Digital Technology – Sonia York-Pryce	
1.15 pm	*Lunch*		
2.15 pm	**Digital Art presentation**	***The Cube, P Block - QUT*** **The Cube demonstration**	
2.45 pm	**Session 2**	***QUT P Block, Rm 413a. Next to the cube*** **The Spatial and Temporal Poetics of Webcam Viewing** – Alannah Gunter	
		Audiovisual Installation as Ecological Performativity – Teresa Connors	
3.45 pm	*Afternoon Tea*		
4.15 pm – 5:15 pm	**Workshop and Demos**	***Building S02, Room 2.16*** **River Listening –** *Toby Gifford*	***Building S07, Foyer*** ***Demo*** **- The LAB colour space: An invaluable tool for working photographers** – Russell Brown
7.00 pm	*Conference Dinner at The Shore Restaurant, South Bank*		

FRIDAY 13 FEBRUARY 2014

		Building S07 Room 1.23
9.00 am	**Keynote 2**	**Creative Candidates, What Industry is Looking For -** *Tim Kitchen and Richard Turner-Jones*
10.00 am	**Session 3**	**That Syncing Feeling: Networked Strategies for Enabling Ensemble Creativity in iPad Musicians –** Charles Martin
		For Grief: A photographic social documentary of funeral directors and their experiences – Yoko Lance
11.00 am	*Morning Tea*	
11.30 am	**Exhibition**	***Building S07, Room 2.16 & 2.17 & 2.18*** **Exhibition –** Debra Beattie, Darren Fisher, Tyson Foster, Sara Irannejad, Yoko Lance, Kellie O'Dempsey
12.30 pm	*Lunch*	
1.30 pm	**Session 4**	***Building S07, Room 1.23*** **Crustacean Caquaphonics –** Toby Gifford & Matt Hitchcock
		Cinematographic Evolution: What Can History Tell Us About The Future? – Daniel Maddock
		Seeking the animation artist in a multi-projection environment – Andi Spark & Leila Honari
3.00 pm	*Afternoon tea*	
3.30 pm	**Session 5**	***Building S07, Room 1.23*** **Permitting Chaos as Creative Strategy** – Daniel Della-Bosca
		Using Digital Technology in a Fine Art Practice – Sara Irannejad
4.30 pm	**Closing Panel**	**Trends in Digital Arts and Design**
5.00 pm	*End of conference formalities*	
6.00 – 11.00 pm	**Performances**	***Building S01, Queensland Conservatorium / Opera Queensland*** **Studio 4101 - Performances at Opera Queensland / Queensland Conservatorium** Complementary entry for CreateWorld delegates. http://operaq2015.com.au/whats-on/studio-4101/

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CreateWorld 2014 - Keynote Presentations

Is There No Digital Arts?

Cat Hope from West Australian Academy of Performing Arts, Edith Cowen University.

Central to the book Digital Art – An Introduction to New Media is the idea of digital art as part of the ongoing continuum of technology that artists have been fascinated with throughout history. 'Digital' simply means the assignation of numerical values to phenomena[1] (Lister et al. 2003: 1516) – a mathematical process and format that is applied to information. Does digital art engage new processes compared to other types of art on that basis alone? The digital has been engaged to create, transform, record, reproduce, transmit and archive artworks as well as other aspects of our lives, but does it create a new type of art? This presentation discusses this polemic, with an emphasis on the impact and potential of the digital on the performative arts.

Associate Professor Cat Hope is an academic with an active profile as a composer, sound artist, soloist and in music groups based in Western Australia. She is the director of the award winning new music ensemble Decibel and has toured internationally. Cat's composition and performance practices focus on low frequency sound, graphic notation, noise and improvisation. Her works have been performed at festivals internationally and broadcast on Australian, German and Austrian radio. In 2013 she was awarded a Churchill Fellowship to study digital music notations internationally, and has been awarded the APRA|AMC Award for Excellence in Experimental music in 2011 and 2015. She curated the 'Drawn From Sound' exhibition of Australian graphic notation in Sydney 2014 and Perth 2013. She was the Peggy Glanville Hicks Composers house resident in 2014, and is a fellow of the Civitella Ranieri Foundation.

Cat is currently a researcher at the Western Australian Academy of Performing Arts at Edith Cowan University. Her co-authored book Digital Art – An Introduction to New Media is out on Bloomsbury Academic.

Creative Candidates, What Industry is Looking For

Tim Kitchen and Richard Turner-Jones from Adobe.

This presentation looks at recent research into how the evolving marketplace and technology are changing the evaluation criteria for job candidates and increasing the need for creative problem solving and digital visual media skills. Two primary factors driving this change are the digital revolution and the belief that creativity and creative thinking are becoming indispensable to success. It will also demonstrate some of Adobe's new Creative Cloud initiatives and efficient workflows for full time Creatives in a range of fields and those looking just to have a creative edge.

Dr Tim Kitchen is the Senior Education Advocate at Adobe for Asia Pacific and the Vice President of DLTV (Digital Learning and Teaching Victoria). He is also the Co-Director of the Building Bridges interfaith dialogue program in Melbourne schools. Tim started his education career in 1991 and has taught in all three sectors (Primary, Secondary and Tertiary). Most recently, he was the Director of Learning Technologies at Strathcona Baptist Girls Grammar School in Melbourne, Australia. Tim is on the sessional teaching staff at Swinburne University of Technology in Melbourne where he teaches ICT in Education and also works casually with Wilkar Productions as a video producer, camera operator and editor. A passionate advocate for creativity in education, Tim is a regular writer and presenter for a wide range of national and international journals and conferences.

Richard Turner-Jones is a Solutions Consultant for Adobe (ANZ) utilising his knowledge of Adobe's tools & services to develop a seamless integration into existing workflows. With more than 18 years in the multimedia and web application development field, as both an Adobe Certified Developer and Instructor, he has been involved in the development of many high profile projects for the Australian Army, Airservices Australia, Suncorp and Caterpillar, to name but a few. In addition, he works fostering and supporting the local creative community including managing the Brisbane Adobe User Groups.

Dr. Tim Kitchen

Richard Turner-Jones

Peer Reviewed Full Papers

Opera Composition and Performance Utilising Computer-Based Recording Technologies and Virtual Instruments

Dr. Eve Klein
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Abstract

Classical music has resisted incorporating music technologies into its mainstream compositional practices, in part because technology allows greater access to the techniques and timbres associated with virtuosic human acoustic performance. However, classical music composition and production can be enabled by music technologies, and they offer an effective vehicle for women to test and occupy the role of composer, performer and producer.

This paper outlines how home-studio music production technologies were used to compose and stage The Pomegranate Cycle (2010, 2013). The Pomegranate Cycle was composed, recorded, performed and produced by a female opera singer using consumer-level recording technologies. This self-directed methodology is unique in opera, providing a model for other singer-composers.

Introduction

According to Arnold et al opera is defined as 'work intended to be staged, in which singing plays a dominant part in portraying the actions and emotions of the characters'[5]. Others like Brown consider these definitions as 'narrowly conceived' because there are 'so many exceptions among the operatic works' that they prefer to define opera 'more generically' as 'drama in which the actors sing some or all of their parts' [7]. Brown believes that the three principal elements of operatic works are 'music, drama and spectacle' [7]. This latter definition of opera is exemplified in the work of composers such as Robert Ashley and Philip Glass who have produced operas which deliberately do not utilise traditional operatic narrative structures, vocalities, compositional devices or staging techniques [18 pp.89-99]. Opera can be difficult to conceptualise and is, therefore, a notion best defined by its participants: composers, conductors, directors, performers, and audiences. This article does not deploy a fixed definition of opera to regulate discussion, rather I have drawn upon opera as a current day musical genre employing a vocal style, and/or elements of spectacle, narrative, and structure that signify as opera to its participants.

Despite being a widely performed contemporary musical genre, operatic repertoire staged by the world's major opera companies is overwhelmingly historical [12; 19; 21]. Feminist and queer musicologists have critiqued historical operatic repertoire for reproducing narrative tropes that subject female characters to violence, rape or death [1; 3; 10; 23]. Opera singers negotiate these tropes while themselves possessing very little authorial power within the structure of traditional opera companies where directors, conductors, designers and coaches take primary responsibility for a production's interpretive and aesthetic qualities. Therefore, there is a need to challenge historical representations of women in opera by encouraging the presentation of newly composed operas and by incorporating performance strategies which allow female singers to take on greater authorship within a production.

This paper outlines how home-studio music production technologies were used to compose and present an opera entitled The Pomegranate Cycle (2010, 2013). The Pomegranate Cycle was composed, recorded, performed and produced by a female opera singer using consumer-level recording technologies. This self-directed methodology is unique in opera, providing a model for other singer-composers. The Pomegranate Cycle has two primary modes of output: an album recording and several staged performance versions. Its libretto delimits a single continuing narrative centred around four characters which are portrayed by a single mezzo soprano.

The score is the fulcrum upon which traditional opera relies to define the parameters of the work. The realisation of an opera through live performance or on recordings is an extension of this relationship between work and score. The Pomegranate Cycle was composed through the process of recording, the crafting of which, also established the framework for live performance versions of the work. This mode of creation reflects compositional techniques more commonly associated with popular music [see: 25]. It utilises both commercial and custom-made virtual instruments, samples, sound-processing plug-ins and multi-channel surround sound recording techniques. Music was scored in Sibelius notation software. Recording and editing took place in standard Digital Audio Workstation (henceforth DAW) software Logic Pro and Pro Tools. Live performances were realised using a combination of Live DAW software, custom-made plug-ins and instruments, and custom-built gestural control devices. A comprehensive notated score was not produced because it would be inadequate to describe the use of sonic editing, layering, and real-time sonic processing integral to the work's sound design.

The technology-centred approach to composition and performance employed in the opera's creation emerged out of a desire to challenge the representation and location of women in opera. As a professional opera singer I wanted to effect change by 'Doing-It-Myself' and composing new work. Consequently, the methods employed in the creation of this work draws from Do-It-Yourself-orientated (henceforth DIY) models of creative practice utilised in various popular music genres. DIY practice allows the singer to become the producer, the composer and the artist simultaneously. This model has proved successful, allowing the composition and performance of an opera as a solo practitioner working outside conventional classical music structures.

Context and Problems

Technology-enabled DIY approaches to musical composition and performance are now ubiquitous within popular music [25 p.110], but musicians trained in the Western classical traditions[1] have been more reluctant to integrate technology into composition and performance practice methodologies [see: 18 pp.158-161]. Where artists have explored and integrated technologies with classical music textures, structures or performance techniques such work has tended to attract niche/fringe classifications such as 'new music' 'acousmatic music', 'crossover-classical' or 'alt-classical'. These classifications serve to separate such works from classical music's historical traditions and genres. Artists and institutions focused on the presentation of classical repertory have primarily used media technologies to create perfect recorded versions of repertoire which sound like seamless, virtuosic concert hall performances [see: 20]. This is partly a consequence of classical music "instituting primary value" from manual human craft [14 p.58] and partly a result of the imbalance of between the presentation of historical and contemporary works in classical music repertory performance [19 p.75]. The implications of DIY recording processes are also problematic because the DIY ethos asserts that things can be made independently of, or in opposition to, tradition [24 p.4]. The results can include rough edges, and the process of creation may be inscribed on the end product. Classical music's traditional focus on virtuosity and Werktreue[2] is in natural opposition to such ideals and aesthetics. However, recording technologies have advanced to such a degree that truly fine sonic results are possible, even within self-directed projects. There is great potential to expand approaches to classical music practice—including the representation of repertory—by further integrating computer-oriented composition, production and playback techniques into live classical music performance. Such a discussion is worthy of consideration, but is beyond the scope of this article [see: 20].

Historically, classical music composition pedagogy has been oriented around the study of orchestration and periods of training with leading composers. Conservatoires and tertiary music institutions play a key role in a composer's development because they provide access to the resources and networks required to forge a career. Conservatoriums provide access to human players and ensembles as a means of testing and realising notated works, and such processes act as a marker of value for composers. Orchestral works realised using virtual instruments and MIDI based technologies are often critiqued for sounding "metallic", "flat," "ersatz orchestral sounds," "mechanical," "weak sounding," and "depressingly synthesized" [22]. Such criticisms persist despite radical improvements to these technologies over the last twenty-five years. According to Morgan screen composers who employ virtual instruments to realise orchestral works encounter prejudice from art music aficionados when they acknowledge their use, despite this being both credible and common compositional practice within their industry [26]. The problem is not necessarily the technology, nor its aesthetic application, but rather the anxieties the use of such technologies can generate.

Women who want to forge careers as composers encounter difficulties because they are significantly underrepresented in the profession. In Australia only 17% of composers are female [11 p.6]. In Britain only 14% of the Performing Rights Society for Music Foundation's registered composers, songwriters and music publishers are female [4]. In America women constitute only 15% of composition faculty members, only "15% of living composers whose works were featured on recent orchestral seasons and new-music series" and in "the history of prestigious composition prizes, women obtain top honours only 9% of the time" [2]. Women are entirely excluded from the classical music repertory canon [23 pp114-115; 9]. A lack of representation creates metaphorical and real obstacles for women who want to compose.

DIY and technology-centred approaches to music composition and performance can confront stigma in traditional classical music communities precisely because they are perceived as lowering the barriers for accessing the timbres and techniques foregrounded within Western art music genres. For example, Godlovitch states that synthesiser technology lacks "the right pedigree" to fit comfortably into classical music environments because its players have not "emerged and evolved within the continuous traditions of the standard Guilds…if the repertoire cannot exclude the masses, then the instrument is used to do so'" [14 p.78]. However for the purposes of women, who struggle for representation within the classical music 'Guild', these same technologies offer great possibility for bypassing 'Guild' regulations. Technologies provide an infrastructure where classical composition can be developed, and the tools for realising such compositions as either recordings or live performances. Orchestral works can be created using virtual instrument software which is wholly programmed and edited within a digital audio workstation environment. While not necessarily ideal, such configurations allow emerging composers to test and develop their craft, and it also enables them to sonify their work for circulation and feedback. This is not the same practice as learning to play an acoustic instrument to a virtuosic standard, nor handwriting a notated score for performance by a human ensemble. However it is a practice which teaches composition skills and allows emerging composers the opportunity to develop their own authorial relationship to orchestral timbres. This opportunity is especially valuable for women exploring composition for the first time as it affords them the privacy to develop compositional techniques within somewhat unfriendly contexts.

Project Overview

The Pomegranate Cycle is a fully-staged operatic monodrama with a continuing narrative. Its structure is divided into three short acts which portray: the kidnapping and rape of Kore; Demeter's search for her lost daughter; Kore's transformation into Persephone; Persephone's release from her captor; the public response to Persephone's rape, and her eventual process of healing. One singer portrays four separate characters, swapping between roles and displaying contrasting characterisations through changes to physical and vocal inflections. How The Pomegranate Cycle engages with and reflects upon operatic narrative structures and vocal

[1] For convenience this paper will employ the terms 'classical' and 'classical music' to encompass all genres of Western art music oriented around historical music repertory and its related pedagogies and performance traditions.

[2] The drive to realise a work as it was conceived of by its composer within the musical score. See: [16 p.89] and [15 p245].

conventions has already been detailed in a previously published academic paper [see 18].

The Pomegranate Cycle is composed for a mezzo-soprano, laptop, custom-designed sound sculptures and visual projections. The opera draws upon ambient electronica and post-classical forms and is composed from song, spoken word, concrete sounds, glitch, traditional scoring for symphony orchestra and layers of digital audio processing. The work's composition demonstrates how music technologies can allow a singer to compose and convincingly realise opera across multiple audiences and performance contexts without access to the kinds of institutional support or infrastructure which opera productions normally require—such as a facilitating opera company to produce the work or a live orchestra to realise its score. In live performance, the work utilises playable sound sculptures, triggering laptop based sound libraries and processing plugins. This allows the singer to manipulate her vocals, and initiate and manipulate sounds in real-time. In doing so, the singer becomes an author within the work.

Project Methodology

The Pomegranate Cycle was realised in a series of distinct stages, which are broken down in Table 1. Table 1 includes a brief description of the processes involved in realising each stage of the work, along with a list of the resources used to achieve these outcomes. The resources required are extensive, however most are accessible through prosumer-level home recording studios. Which is to say with a few notable exceptions (discussed below) they should all be readily available through social and/or creative networks.

The methodology used to create this project draws from notions of DIY, particularly the impetus of 'making do with what you have' and leveraging contacts to fulfil labour, skills or equipment shortfalls. This requires being clear and communicative to volunteers who are supplying labour or resources for the project, and where possible, being flexible with deadlines. Where this methodology of self-directed and realised work differs from a low-fidelity 'DIY ethos' employed in popular music genres such as punk, is that the project needed to negotiate certain markers of 'quality' and 'virtuosity' required to keep the work convincingly in-dialogue with the tradition of opera. These markers are: the integrity of operatic vocal tone and production and its location within ambient resonant spaces; the incorporation of convincing orchestral timbres; and a musical/ sonic complexity employed to add additional meaning to the stage narrative beyond the libretto text. Key to this project was managing the tensions that played out when pursuing a self-directed project that was oriented around the classical music traditions, and by necessity this project was engaging with and operating against the processes required to produce an opera.

The overall design of The Pomegranate Cycle is premised on economy. There is one singer, who embodies all of the opera's different characters and is accompanied by a laptop. As a recording project, this minimised the need for sourcing, rehearsing, coordinating and recording other musicians, which reduced the complexity and expense of the process. Free or cheap spaces were utilised for recording, these being a university recording studio for initial test recordings, my own home studio for editing and basic overdubbing and a local church with a good reverberant acoustics. The final versions of the operatic arias were recorded with a surround sound microphone array in an acoustic environment that best represented the harmonic overtones present in my voice: a church with a reverberant acoustic and minimal ambient noise. This was important because the reverberant timbre of the classically voice acts to anchor the work to the operatic tradition. The minimum equipment necessary for realising a recording in this way is: a laptop computer, a DAW, an orchestral virtual instrument package, a transparent audio interface, microphones, monitoring headphones and access to a quiet ambient space for recording.

Adopting a self-directed model for the creation of The Pomegranate Cycle required that some traditional elements of operatic staging be rethought. Notably, there was no set for the performances, only sculptural elements and props were included on stage. The sparsity of the set was overcome by incorporating a backdrop of video projections. Videographer, Ravi Glasser-Vora, shot and edited seventy minutes of footage to accompany the performance as a volunteer. This was loosely divided into scenes mapped to individual songs and contained interrelated thematic content. The scenes did not match the diegetic locations where the action of the story was occurring, but instead, they were used to add a metaphorical and political layer to the work, underscoring themes present in the libretto text. Similarly, access to a traditional orchestra was not feasible. Thus, the utilisation of virtual orchestral instruments on a laptop necessarily directed my approach to composition (see discussion 'Symphonic Simulation' below). Aspects of the tradition that I wanted to reference were the relationship between opera and dance, and the convention of opera being a fully-staged sequential narrative. Opera director Narelle Yeo agreed to set the work as a volunteer. Auditions were held for a volunteer dancer and Liz Evans joined the show as the second principal artist. A sufficient number of dancers auditioned, which might have allowed for more performers being incorporated into the staging. However, transport and accommodation costs for a larger ensemble would not have been feasible. The work received two production runs during 2010, firstly at The Brisbane Festival (Metro Arts, Brisbane), and secondly at Sydney's Imagine Festival (Cleveland Street Theatre, Redfern). Other versions of the work have been staged subsequent to the 2010 performances with different creative teams.

In total The Pomegranate Cycle cost approximately AU $4600 to produce across the work's multiple outputs. This can be broken down into the following components: AU$900 for software, AU$2500 in expenses related to four production runs of the work in Brisbane, Sydney and Perth, AU$900 towards CD duplication costs and AU$300 in venue hire. In my experience as a singer, it has cost the boutique opera companies I have worked with well in excess of $45,000 to stage short, single production runs of a repertory work with a chamber orchestra. Such productions incorporate large numbers of volunteers contributing free labour and skills and principle singers often perform without payment. The primary expenses in these productions are venue hire, payment of the orchestra, construction of the set and promotion. By rethinking approaches to composition and performance, a small-scale opera production can benefit by substantially reduced production costs.

Breakdown of the Stages, Processes & Resources Used in The Pomegranate Cycle
Key: #=Self-directed, @=Assisted by other people, %=University or other institutional support

STAGE	PROCESS	RESOURCES
Initial investigation & research	• Brainstorming initial ideas # • Researching topic # • Writing project proposal # @ • Creating libretto structure #	• Library • Internet Access • Word Processing Software
Writing Libretto	Writing, editing and rewriting #	Word Processing Software
Experimentation and Structural Development of Composition	• Improvising Musical Ideas using voice and piano # • Recording improvisations into computer-based notation software #	• Voice • Piano • Hand-held recorder • MIDI-Keyboard connected to a laptop with notation software • Headphones/Speakers
Writing instrumental and vocal lines using virtual orchestra software	• Fleshing out ideas using virtual instrument software to realise instrument timbres # • Working ideas into complete orchestral parts, taking into account the timbres available in the virtual instrument software, including areas of strength and weakness # • Programming changes of articulation and velocity to reflect different instrumental playing techniques # • Singing and recording sketches of vocals to test their relationship with instrumental timbres # • Reworking in response to feedback # @ %	• Virtual Instrument Software • Notation Software • DAW • Headphones/Speakers
Recording	• Finding appropriate locations to record vocals: university recording studio, home studio, and a local church # % • Treating the acoustics of the recording location to produce better sonic results: putting up quilts, mattresses and acoustic foam to lessen reflections entering the microphone from parts of the space likely to introduce undesirable reflections, distortions or noise # • Self-recording operatic vocals into a laptop computer, using microphones in a surround-sound array to capture natural reverberation from the recording space # • Self-recording spoken-word vocals and overdubs into a home recording computer using a basic condenser microphone # • Recording found sounds at various locations using a handheld digital recorder #	• Various recording spaces accessed either for free or at low cost. • Absorbent material such as mattresses, quilts and acoustic foam. • Various microphones, most from my personal collection, but also borrowed from the university and colleagues. • Microphone stands • Laptop • DAW software • Analogue-digital converter • Preamp • Cables • Headphones • Hand-held digital audio recorder
Mixing	• Setting up a MIDI-Over-Lan network to stream virtual instrument playback between multiple computers # • Bouncing down finalised orchestral MIDI parts to audio # • Editing vocal parts # • Integrating & editing concrete sound components # • Applying processing & effects # • Mixing relative volume levels & spatial positioning of tracks # • Reworking in response to feedback # @ %	• MIDIoverLAN software • Two computers • DAW software • Virtual instrument software • Effects and processing plugins • Headphones/Speakers
Mastering	• Adjusting the colours/textures, volume and positioning of final stereo tracks in relation to each other # • Reworking in response to feedback # @ %	• Computer • DAW software • Processing plugins • Headphones/Speakers

STAGE	PROCESS	RESOURCES
Staging the work as a live performance in Brisbane & Sydney (2010)	• Applying for performance opportunities at festivals # Venues were provided but other resources required: - Obtaining suitable cast & crew (found through networking and advertising) #@ - Obtaining insurance & clearances for the show # - Designing, funding & coordinating advertising # - Acquiring costumes, props & makeup #@ Other considerations included: • Managing rehearsal periods #@ • Assigning workloads to volunteers # • Obtaining funding for expenses # • Shooting and editing images and video for use in the performance @# • Booking and managing accommodation, flights and other transport # • Documenting performances for later use #@	• Laptop • Internet access • Volunteer personnel • Wordprocessing software • Website infrastructure • Photo editing/design software • Video editing software • DAW software • Virtual instrument software • Effects and processing plugins • Headphones/Speakers • Audio interface • Microphones • Video cameras • Photography cameras • PA, mixer and cables • Data projector & screen • Costumes & makeup • Props and basic set pieces • Programs • Various items of hardware (e.g. ladders, tools)
Reconfiguring the work for staging in different contexts: pubs, festivals, series performances, and galleries (2011-2013)	• Adjusting performance to suit different venues and audiences# • Editing composition's duration to allow for shorter and longer stagings of the work. • Coordinating costumes, props & makeup # • Booking & managing accommodation, flights and other transport # • Coordinating advertising & promotions with event organisers #@% • Documenting performances for later use #@ • Designing and building sound sculptures to allow for alternate live-triggering and gestural control of sounds on stage and to provide an installation component to the staging #@	• Volunteer Personnel • Wordprocessing Software • Photo-editing/design software • Video editing software • Website infrastructure • DAW software • Virtual instrument software • Max/MSP software • Effects and processing plugins • Headphones/Speakers • Audio interface • Microphones • Video/photography camera • PA, mixer and cables • Data projector and screen • Arduino boards and electronic components • Costumes, makeup and props
Promoting and discussing the work online (2010-2014)	Interacting on social networks such as Facebook, Twitter, Soundcloud & YouTube for promotion & content sharing #@ Capturing and editing video & audio for online sharing # Updating website & blog #	Computer Website Infrastructure Photo editing/design software Video editing software DAW software Processing plugins Headphones/Speakers Audio interface
Releasing the work as an album on Wood & Wire (2013)	Reworking recording for album-release format # Photo and video shoots #@ Photo and video editing #@ Album design @% Press release and album-specific publicity on traditional and social media #@% Distribution and duplication networks #@%	Computer DAW software Effects and processing plugins Photo editing software Video editing software Broadband internet

Table 1: A Breakdown of the Stages, Processes & Resources Used in The Pomegranate Cycle
Key: #=Self-directed, @=Assisted by other people, %=University or other institutional support

The Pomegranate Cycle was an independently driven and realised project. Yet I did have access to a community of artists that I have known through my practice as an opera singer and electronic music performer. In particular, the experimental music and performance communities were extremely welcoming, giving exposure to my work and providing opportunities for me to present performances of The Pomegranate Cycle. Ultimately, it comes down to access. The Australian electronic music and experimental communities are welcoming to female artists. In these communities, there are many female role models who have established themselves through practice, and who have subsequently gone on to teach at universities, host events, run record labels or form women's artist collectives. Some examples include Dr Ros Bandt (sound artist, composer, academic researcher and director of The Australian Sound Design Project), Melinda Taylor (International DJ, electronic producer and co-founder of the indie-label Couchblip!), and Dr Donna Hewitt (composer, singer, experimental performer, academic and member of the collective LADY Electroncia). It is usual to attend a gig in the experimental electronic music community and find at least one woman performing her own compositions. While gender ratios are uneven, the spirit is far friendlier towards female composers than has been my experience within the classical music community. Having the support of these communities has meant that I have been provided with the spaces, networks and resources to extend my compositional practice.

The experimental electronic music community is also welcoming of new approaches to music practice. Experimental music, by definition, encourages an 'anything goes' attitude to musical style, performance techniques, and genre, thereby encouraging artists to form their own unique perspectives on composition. As a consequence, everyone takes a self-directed approach in these communities. There may be exemplary practitioners, but there is not an established tradition which artists are regulated against, and so the community progresses in a circular fashion: they hear each other's work, they experiment and compose, they perform and they reconfigure. Some sections of the experimental community are dedicated to acoustic music performance, but technology forms the backbone of many approaches to experimentation. From circuit-bent toys, to self-programmed MAX plug-ins, to hand-built synthesisers or acoustic sounds processed on laptops, many experimental music practitioners explore technology as an everyday part of their craft.

Symphonic Simulations

Virtual instruments are software plug-ins which trigger sounds using the MIDI-based protocol of digital music communication. Historically virtual instruments have triggered high-quality samples recorded from acoustic instruments played by humans in pristine acoustic environments such as orchestral sound stages. Virtual instruments were distinct from synthesisers that used combinations of signals or digital algorithms to generate and shape a sound. In current practice, it is difficult to make a distinction between synthesiser and virtual instrument plug-ins because contemporary plug-ins often combine synthesised sounds with sampled sounds or processing to form the final sonic output.

The foundation of my compositional practice has been the use of virtual instrument software, particularly orchestral plug-ins like East West/Quantum Leap Symphonic Orchestra and VSL's Vienna Instruments plug-ins[1]. Both plug-in libraries utilise recorded samples of orchestral instruments which replicate dozens of different articulations (playing techniques) produced within each instrument and instrument family. When programmed correctly within DAW software the results will sound seamless for the listener. Research by Morgan shows that the use of virtual instruments by screen composers is normal practice with 15% of screen compositions containing only virtual instruments and 55% of screen works combining virtual instruments with recordings of human players [26]. The primary reason screen composers state for using virtual instruments in Morgan's study are ease of use, access to instrumental sounds and economy [26].

Like screen composers, I have utilised orchestral plug-ins to access orchestral timbres that I could not realise in other ways, particularly operating as an independent artist. However, my use of virtual instruments is not intended to substitute for orchestral players. I use them as instruments in and of themselves. The intention is to reference traditional orchestral timbres as a marker of the classical tradition. These instruments simulate orchestral aesthetics, signposting them, but ultimately standing on their own as something that both sounds and functions differently. Baudrillard believes that abstraction today is "no longer that of the map, the double, the mirror of the concept", and that "simulation is no longer that of a territory, a referential being or substance" [6 p.1]. Rather, "it is the generation by models of a real without origin or reality: a hyperreal", where "the territory no longer precedes the map, nor does it survive it" [6 p.1]. Classical music is the terrain, and virtual orchestras, as simulations of acoustic orchestras, generate new hyperreal sonic potentialities. This opens composition to possibilities formally unachievable with human players. Milton Babbitt and Glenn Gould utilised a hyperreal approach to music technologies to realise aspects of compositions not available to them by means of human acoustic performance [13 p.288, pp. 243-44; 17 p.42]. Similarly, when compositing The Pomegranate Cycle, I looked at the available timbres that virtual instruments were capable of producing and composed the instrumental parts to maximise the aspects of these timbres which sounded the most credible. Frequently, particularly with string instruments, I employed the most extreme pitch ranges, or layered multiple independent solo lines for the same instrument, as opposed to separating out harmonic textures for different instruments in the same family. In the case of the piano, I constructed chords that extended beyond a human hand span. An example incorporating all of these possibilities is the piece, Seeds of Accusation (see: [28 Track 14])[2]. Employing these techniques was a conscious compositional choice based upon the sonic colours and layers I wished to achieve. In this context, unconventional and extreme approaches to instrumentation expressed the main character's defiance to her experience of violence explored in the opera's plot.

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[1] The total cost of these virtual instruments was approximately AU$2100. A small grant of $1200 was provided by Macquarie University which enabled the purchase of two VSL plug-in libraries utilised in the project.

[2] Tracks referred to in this paper available from: http://woodwire.bandcamp.com/album/the-pomegranate-cycle

Adopting virtual instruments as the 'orchestra' allowed me to compose for non-standard ensemble configurations. Narcissus Bloom & the Rape of the Pomegranate (see: [28 Track 5]) includes instrumentation for most symphonic instruments and piano, but other pieces such as Portent (I) and Land of Hades also include instrumentation for pipe organ, glass harmonica, verrophone, bass waterphone, tam tam and bowed crotales (see: [28 Track 2, 9]). Yet other pieces include prepared piano (Burning, [28 Track 10]), lithophone (Seeds of Accusation), and instrumental sounds produced by layering together the samples from two or more acoustic instruments (Punishment [28 Track 13]). These additional instrumental timbres add depth and dimension to the sound world, but would almost certainly not be available in an acoustic performance situation: pipe organs are not conventionally found in an opera house, and rare instruments like glass harmonicas and lithophones (effectively) never are. In embracing laptop-based virtual orchestras as my performance instrument, I also freed myself from conventional instrument configurations.

Baudrillard states that to dissimulate is "to pretend not to have what one has" while to simulate "is to feign what one doesn't have", and so "one implies a presence, the other an absence" [6 p.3]. However, he considers that simulation is "more complicated" because "simulating is not pretending: 'Whoever fakes an illness can simply stay in bed and make everyone believe he is ill. Whoever simulates an illness produces in himself some of the symptoms'" [6 p.3]. Consequently, while "pretending, or dissimulating leaves the principal of reality intact", simulation "threatens the difference between the 'true' and the 'false', the 'real' and the 'imaginary'" [6 p.3]. This is precisely where the conflict between classical music and virtual orchestral technologies originates. For many contemporary composers or listeners, virtual orchestral technologies produce enough of the timbres of a traditional orchestra to threaten the distinction between human acoustic generation and computer generation (see: [26]). Therefore, the foundations of classical music as the pinnacle of human manual craft are jeopardised. This is especially so when the virtual instruments' timbres are specifically composed for. By not trying to 'fake', or 'pretend' that the instrumentation in The Pomegranate Cycle was composed for an acoustic orchestra, I open up a dialogue with the tradition around the future of the craft.

Adopting Variable Recording Aesthetics

Classical music repertory recordings predominantly reproduce a singular aesthetic on record. Engineers and producers craft mixes where the object is "to achieve an aural image something like the sound perspective that might be heard from the middle of the stalls in one of the great concert halls" [8 p.146].

Replicating the concert hall environment on The Pomegranate Cycle recording seemed futile, given that the use of virtual orchestral instruments had already broken away from associating orchestral sounds with human manual craft. Consequently, The Pomegranate Cycle constructs a variable sonic reality in the same way that popular music recordings do. Sounds are layered and audibly processed, and instruments' positions within the stereo field move around to create tension and interest. An example of both sonic processing and variable stereo location is the treatment of the piano line in the introduction to Narcissus Bloom and the Rape of the Pomegranate (see: [28 Track 5]). In this song, a basic piano motif comprised of three notes is reversed, stretched, equalised, has reverb effects applied to it, and is alternately panned hard left and hard right in the stereo field. The Pomegranate Cycle thus demonstrates a contemporary and free approach to mixing, comparable to popular music production aesthetics. This variable sonic reality is useful to the construction of the opera's various landscapes. In the opera, the principal character moves between the human world and the underworld, and the narrative shifts between external experiences to internal monologues. The audience is similarly moved through these spaces whilst also being engaged directly through the opera's narration. Having the opera's sonic realities shift location, has facilitated the audience's movement through the narrative in an economical way. This means that, as a recording, the locations of the work carry through without the opera's visual performance components, and as a staged work, the absence of a realistic set is not marked, given that the sound world itself is hyperreal.

Employing variable mix aesthetics in the work served several purposes: processing the sounds of virtual instruments in a variable way meant that the listener could perceive that their function was intended to be different to acoustic orchestral instrument; it contemporised the aesthetics of the music by locating the work closer to the aesthetics of popular music; and in doing this, it allowed the work to circulate inside popular and experimental music communities. There are a growing number of classical artists adopting a contemporary approach to recording located either within alt-classical or ambient electronic music genres and The Pomegranate Cycle should be understood within the context of these musics.

Initial Reception

The work has been well received in the experimental music community, with multiple performances at festivals during 2010 and 2011. I also worked as a support act to rock bands, singing songs from the opera in pubs and at roller derby events. A reworked, installation and live performance version of the opera was performed at the Underbelly Arts festival in Sydney and at the Tura New Music Festival in Perth during 2013. The Pomegranate Cycle's hybridised musical aesthetics, enabled by a self-directed approach to composition, has allowed the work a wide circulation within popular music and experimental performance spaces.

A full-length recording of the work was released in 2013 by independent label Wood and Wire and to-date has been downloaded over 50,000 times. The album has received international radio broadcast and reviews; music has been incorporated into secondary works including dance performances and films. Most importantly, the opera was a finalist for Vocal Work of the Year in the APRA/Australian Music Centre 2014 Art Music Awards showing significant, positive critical recognition within the Australian art music community.

Conclusion

This paper provides a brief contextualisation of the technology-centred self-directed model of composition and production used to realise The Pomegranate Cycle as a recorded and staged work.

A central motivation of this project has been to develop a practice whereby a new model of opera can be proposed and tested. Working independently as a composer (and librettist) has allowed me to confront sexist conventions within

operatic narrative and also the absence of women from the classical modes of composition. Music production technologies have enabled me to circumvent institutional hierarchies and demonstrate change led by practice. This approach has required me to occupy multiple roles simultaneously, most notably, that of composer, performer, producer, marketer, designer, video editor, copywriter, makeup artist and costumer. In taking on such a mammoth project, I was able to learn vital skills as a producer and composer. My compositions improved in scope and complexity as the project developed, as did my ability to recognise problems and respond to listener feedback. Consequently, I was able to rework pieces to higher standard with significant critical acclaim. Developing as a composer is an ongoing process, and in realising The Pomegranate Cycle, I have established a viable mode of practice that can drive my efforts forward.

Based on these experiences, I conclude that exploring classical music composition and production through music technologies can be an effective vehicle for women to test and occupy the role of composer. If more women are able to access compositional roles, there is the potential to effect change by numbers. Methods to engage more women in self-directed approaches to composition requires further investigation but shows great potential as The Pomegranate Cycle demonstrates.

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